HowOur Returning Soldiers May Spread Pestilence

Why the Same Carelessness of Medical Officers Which Let Influenza Into the Country

Would Endanger the United States with a New Set of Epidemics

By Arthur C. Jacobson, M. D., Associate Editor of the Medical Times.

HE Health Commissioner of New York, Dr. Copeland, sends out warning that our returning soldiers may spread pestilence throughout the United States. Three distinct diseases are the chief menace:

Trench fever. Typhus fever.

Relapsing fever. And the danger in each case comes from "cooties"-body lice.

Until this great world war these words were never heard on the lecture platform, were never met in books of travel, war or history, were never in the newspapers. Now the "cootie" has become a part of the daily life of the soldier, lecturers discuss

victims keep the army hospitals busy. Will the cootle come in with our returning soldiers or will our quarantine authorities stop him at our ports of entrance? .

him, the war books deal with him and his

These three fevers are not all-typhoid fever, cholera and other diseases may be spread by our home-coming soldiers.

We have recently seen how a great country can quickly be brought under the sway of a disease like influenza. If the lesson that we have had in this respect has sunk in there is hope of a strong policy against the whole list of trench diseases.

Approximately 400,000 deaths from influenza and pneumonia have occurred among the civilian population, of the United States since September 15, according to estimates of the Public Health Service. About 20,000 deaths occurred in the camps in the United States, War Department records show, and the Government incurred liabilities of more than \$170,000, 000 in connection with life insurance carried by soldiers in army camps, not including those in Europe.

Horrible as these results are, what might we not expect from the trenches if a lax policy is to be pursued in the contro! of returning soldiery? The rigid military and medical measures which have given our army such a creditable record in the field cannot follow them into civil life, and therefore much depends upon the efficiency of our local and Federal authorities. A great test of preventive medicine is at

What have been the trench diseases which we have some occasion to fear may not come to an end with the war, and which may transfer their ravages from the battlefront to the residential sections of American cities and to our rural comuni-

Perhaps by familiarizing ourselves with these diseases now, and with their modes of transmission from the infected to the well, we shall be able to supplement effec tively the efforts of our health authorities or relapsing fever or typhus. to keep the new enemy at bay.

Trench fever and typhus are intimately identified with trench life. The diarrheal group has, of course, played a part in our military death rate. Typhoid fever has not figured to any extent, on account of the efficacy of the newer vaccination methods. Hookworm disease has, of course, been detected among our Southern troops. Cholera has been practically confined to the Eastern front, but now that a portion of our troops are in Russia we may yet have to take this disease into consideration. Relapsing fever has raged

rather fiercely in Serbia. Trench fever is of special interest to us, and we shall say a good deal about it. What applies to its mode of transmission also applies to that of typhus and relapsing fever: that is to say, all of these fevers owe their prevalence to the "cooties," alias the "graybacks," alias just plain lice, which at last have reached a point of they may be introduced without apology into polite conversation and belles-lettres.

begin with some "personal" remarks about

eminence, as I have already said, where Perhaps we cannot do better than to

1-The Man Enters the Porch of a Delousing Plant With His Barrack Bag Containing All His Spare Clothing.

It is the body louse that is mainly responsible for the transmission of disease. The louse is a parasite which depends upon human blood for sustenance and upon man's body and clothing for prolonged life and reproduction.

The body louse, or more properly "clothing louse," is somewhat larger than the head louse and is of a dirty gray color, from which it received the nickname "grayback" during the Civil War. The nits, or eggs, are oval, nearly bodies. The vermin and the eggs are found in the seams of clothing and on the hairs of the body. The inner clothing is preferred, but they live in the outer clothing as well. They are most frequently germ found in the seams of the undershirts, who drawers, fork of the trousers, armpits and waistline. Body lice frequently lay their eggs in the hair of the head, as well as in that of the body. Nits are found even in

the eyebrows. The eggs take seven or ten days to hatch under normal conditions -that is, in clothing that is worn constantly. If discarded and allowed to cool for a period each day the time of hatching may be extended for five weeks. They can exist without food, apart from any host, for nine days. The young take from ten to fourteen days to attain maturity. Females, after attaining maturity, require two to four days before they commence to lay eggs. Egg production cannot take place without food or under cool conditions (below 65 degrees Fahrenheit). As many as ten or twelve eggs per day may be laid by each female. A total of three hundred eggs may be laid by one female. A female after maturity may live for forty-six days. Before the close of her life a single female may have 4,160 living offspring.

A cootie bites by seizing the skin with its lips (which consist of a circle of small, hook-like projections) and then thrusting the sucking apparatus through it. Germs carried by the louse may thus be introduced along with its saliva, but it is believed that a commoner manner of infection in the case of man comes about through scratching of skin irritated by bites: the excretions of the pest are thus rubbed into the irritated areas and into the bite by the victim himself, such excretions perhaps containing disease germs sucked in with the blood of the previous victim, who may have had trench fever

The cootie has been responsible for transmitting a larger percentage of disease in the present war than any other single factor, and lice are common enough in civil life to arouse fears for the immediate future. We find the following membrandum emanating from the Surgeon-

Body lice have been found with more or less frequency in troops reaching the ports of embarkation in this country and upon arrival at foreign ports. Observations recently made in this country showed louse infestation in 42 per cent of a group of negro soldiers and in 0.6 per cent of a group of white soldiers. In a body of negro workmen in a certain camp 100 per cent were found carrying body ice. At the same time 2.1 per cent of the crews of transports were found louse infested. As these observations were made in Summer, when the incidence of body vermin is low, it is fair to asume that the

percentage will be higher in Winter." Returning soldiers harboring the organisms of trench diseases from which they have suffered while at the front, can easily become in this country the source of louseborne infection of others. Therein lies



2—All Leather, Rubber and Celluloid Material and Money Are Placed in the Locker. The Man Reseives Two Numbered Tags Corresponding to the Number of the Locker, and Then Proceeds to the Disrobing Roem With His Raccaste Res

who is credit-

ies in Bulgaria, is quoted as saying re-

"The body louse (which, when not feeding, hides in the folds of the clothing) depends absolutely upon man for a livelihood. A newly hatched specimen will surely die within twenty-four hours if deprived of an opportunity to drink human blood. No other animal will serve the 'cootie' as a host. An adult, already well gorged, may survive as long as ten days away from man, but that is about the utmost limit.

"Ordinarily the insect takes three regular meals a day, feeding for twenty minutes at a time. But, unlike the plaguecarrying flea, it does not convey the typhus infection by its bite. Its excreta does the

"The typhus germ grows and multiplies in the stomach of the louse and passes out with the exercta. The latter may easily find their way into the puncture made by the insect's beak, or, if this does not happen, scratching by the human victim may result in introducing the excreta into the tiny wound. We have bred typhus

germs from the excreta of the louse and this point has been definitely set-

"The body temperature of a human being is exactly what the 'cootle' requires for its comfort and wellbeing. Very slight changes of heat or cold are fatal to the insect. If its victim be attacked by fever it will promptly leave him. A dead man is quickly deserted by the warmth-loving parasite.

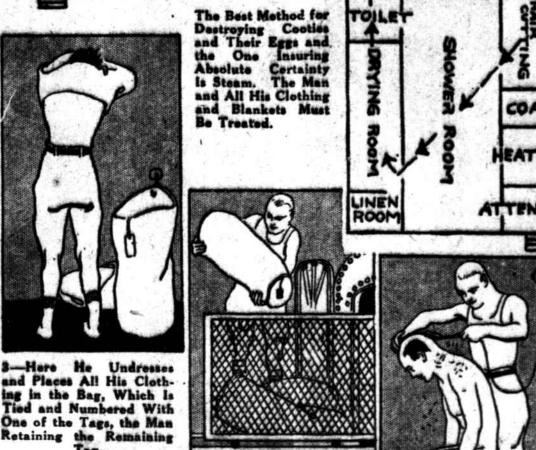
"Necessarily a study of the cootie's life history has been of utmost importance in the investigation of the diseases carried

by that insect. Living specimens have been kept under careful and continuous observation, in order to ascertain their behavior in all sorts of circumstances, their feeding and other habits, and everything possible to be learned in regard to

"In order that the data thus obtained

Microscopical

might be reliable, it was an obvious requisite that the specimens should be normal and healthy. They must be fed regularly on human blood, and one method adopted to this end has consisted in placing one or more of them beneath a pillbox lid on a man's arm, the lid being made fast with a strip of adhesive plaster. Under the lid



-The Bag is Then Placed in a Carriage Which is Pushed into the Steam Sterilizer.

PRESSING ROOM

DRESSING ROOM

5-The Soldier Then Proceeds to the Haircutting Room, Where the Hair Is Cropped With an Electric Haircutting Machine.

7-In the Dressing Room the Man Will Find His Bag, Which Has Passed fer before de-Through the Steam Steri- mobilisation is lizer. The Articles Loft the only way

coming soldiers should be rigidly quarantined and detained until it is absolutely certain that they will not disseminate disease. The best method for destroying lice and eggs and the one insuring absolute certainty is steam. The man and all his clothing and blankets must be treated. The following plan meets all the conditions and thousands of men can be deloused daily through its application: The man enters the porch of a delousing

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typhus. The disease has occurred in wide spread epidemics. Relapsing fever is

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Water is Ob-The Drying

A Steam Sterilizer for Field Work in Destroying Cooties in Soldiers' Clothing.

with the 'cooties' was also put Pains in the shins or muscles of the legs a little bunch of chiffon to enable them to hide-just as ordinarily they hide in the folds of garments worn by the hu-

After one has been bitten by

a cootie which has recently fed Enlargement of a Cootie. upon the blood of a trench fever patient, a period of from six to twenty-two days passes by before symptoms appear. This is called the period of incubation. There are two types of the actual disease, one in which there is a short, evanescent fever lasting from a few days to a week, and frequently followed after a few days of normal temperature by a single short relapse; and a second type in which there is a series of relapses of the fever interrupted by periods of normal

> In both forms as a rule the onset is sudden and the affection is characterized by headache, dizziness, pain in the back and particularly in the legs, and a sharp rise of temperature, usually to 102 or 103.

is a very common complaint. It is often very distressing, and renders the patient restless at night. The pulse is usually in the neighborhood of 100. The face is flushed and the eyes clear and bright. The tongue is coated and the appetite lost. Debility, anemia and disordered heart action follow the acute symptoms.

Various organisms have been described as present in the blood in the course of trench fever, but definite conclusions have not been reached as to the specific germ. The one thing that is known certainly is that the louse is the medium by which the germ, whatever it is, is transmitted.

Typhus not typhoid fever is an acute disease characterized by great prostration. severe nervous symptoms and a peculiar skin eruption. Its occurrence is favored by insufficient food, overcrowding, poor ventilation and filth. The duration of an attack is about two weeks. The death rate varies from 10 to 50 per cent. The specific organism has been identified. What is known as Brill's disease is a mild form of gated.

plant with his barrack pack containing all his spare clothing. All leather, rubber and celluloid material and money are placed in a locker. The man receives two numbered tags corresponding to the number of the locker, and then proceeds to the disrobing room with his barrack bag. Here he undresses and places all his clothing in he bag, which is tied and numbered with one of the tags, the man retaining the remaining tag.

The bag is then placed in a carriage which is pushed into the steam sterilizer. The soldier then proceeds to the haircutting room, where the hair is cropped with an electric haircutting machine. Following this he enters the shower room, where a bath with cresol soap and warm water is obtained. The drying room follows, a table being provided for the clean towels and a receptacle to receive the soiled ones. In the dressing room the man will find his bag which has passed through the steam sterilizer. The articles left in the locker have in the meantime been fumi-

cooties.

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